Notebook, N-01-07-19

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July 19th 1907

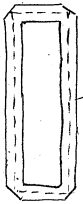
Rob Ralph.

Tests on "Ymoja" Cell.

1) Cell made in accordance with Ymoja Patent description (Complete specification pag. 5, 16-26.)

8.5g of a mixture containing 6 pts of Ag_2O, and 4 pts of flake graphite, pounded, moulded to a cake ½ × 133/1000 × 3". and wrapped in carefully moulded, plated copper gauze 200 mesh, the edges of which are held by a double frame of nickel plated copper (see sketch.) [1]

The silver oxide was prepared by precipitating $AgNO_3$ with KOH and washing 10 times.
The mixing was accomplished in the Edison way, i.e. by rolling on glass disc.
The copper was prepared from precipitated copper carbonate by ignition (extremely fine) and the copper pole assembled in the same way as the silver pole containing 8.5 g of a mixture of 6 pts CuO and 4 pts Graphite.



The elements are assembled under pressure in Edison connector and put into antique cell - only ventilated by a drawn out glass tube.

2)

6.5 g. of (6 Ag_2O + 4 Graphite) in Edison standard grid

6 g of (6 CuO + 4 Graphite) in Edison Standard grid.

6.5 × .6 = 3.90

Ag_2O + O = Ogen

216 + 32 + 16 = 248.

232 : 15.00 / 3.9 = 5.13

3.9 : x

232 : 5.13 | x = 1 / 58.3 / 232 = .27

124

.9 AH. of electricity

CuO to Cu — 24.20

Cu_2O to CuO — 12.10

Cu_2O to Cu — 12.10

12.10

All from grids reduced to anhydrous state in CP Potash.

Ag 1	Ag 2
Cu 1	Cu 2

All start at 4.30

300 M/A.

at 5.00 150 M/A till

Ag 1	at 4	7.30
Ag 2		9.00
Cu 1		2.55 am
Cu 2		12 N.

Both Ags put on
oxidizing in first
soda at 8.45 for 150 m/a.

No 1.
Gassing very slightly
at 2.20 p.
gassing considerably
at 4.20

No 2.
gassing very slightly
at 1.50 a.m.
Still gassing slightly
at 4.20
gassing heavily at
5.45

off 1 ¼ hrs.

1-24

Left overcharging till 3 pm
(the silver plates over and
drops off the nickel wire
in spite of all our
cleverness

To test the sol and
the mud etc the bottom
parts of sol and all mud
was dissolved in HNO_3 and
wholly sol turns thinking
the may be Ag with Cl from
the may be added herein
potash. HCl added herein
dissolved the whole cloud.
and shows no more AgNO3
but colours sol greenish
yellow (CuCl and FeCl, probably
is the NiCl.)
$K_4Fe(CN)_6$ shows no ppt
but turns sol dark brown.
- may be a mixt of copper
and Fe - chocolate and blue
or Ni^2 and Cu in case of
the copper gauge.
Both are pretty nearly alike.

Coupled up in test solution and started dialysis at 150 ml at 4.55

	Closed	Open	%	Closed	Open	
4.55	6 84		94	4.55 6 83		93
5.00	5 84		91	5.01 6 83		91
5.06	11 82		90	5.07 12 83		90
5.15	20 82		90	5.15 20 81		90
5.31	36 81		89	5.32 34 80		90
5.45	50 80		88	5.46 51 78		89
6.0	66 79		87	6.01 66 76		88
6.15	80 78		87	6.16 81 74		86
6.30	95 78		87	6.29 94 73		85
6.45	110 76		85	6.45 110 69		81
6.52	117 76		85	6.51 116 62		64
7.14	139 74		83	7.13 138 57		61
7.29	154 73		82	7.29 153 51		61
7.44	169 73		79	7.46 170 49		59
7.48	173 70		73	7.49 174 49		59
8 —	185 53		64	8.17 202 47		57
8.17	202 52		63	8.34 219 45		—
8.34	219 51		62	8.47 232 44		—
8.47	232 50		61	9 — 245 42		—
9 —	245 49		60	9.15 260 38		
9.16	261 48		—	9.30 275 36		
9.36	281 47		—	9.36 281 33		
9.49	294 46		—	9.49 294 27		
10.02	307 44		—	9.54 299 26		
10.14	319 43			10.01 306 25		
10.35	340 38			10.10 315 24		
10.41	346 36			10.20 325 24		
				10.35 340 23		
				10.42 347 23		

July 24th 1901

No1. Time	Closed	Open		No2. Time	Closed	Open
10 46	311 33		—	10.45	310 23	—
11.01	326 30		—	11 —	325 23	
11.16	341 29		—	11 15	340 21	
11.31	356 29		—	11.30	355 19	
11.46	371 28		Rather blue	11.47	372 17	
12 —	386 27			12 —	387 14	Just coloured blue at top
12 15	402 27			12 15	401 14	
12.34	421 27			12.24	411 13	
12.45	432 26			12.30	417 11	
12.49	436 20			12.45	431 11	
1.10	451 8			12.48	434 6	
1.20	461 0		off	1.05	449 0	off
1.30	471 0			1.25 AM		

1445 AM

Very sediment

Both quite opaque

1 or 2 small crystals

Still hardly enough to be of any importance

no sediment and not as strongly blue as 1

Charging test of cell #

10.55	~~[illegible]~~	.45 open
"	148	.69 V.
11.08		85
11.12		84
11.40		84
12.09		cur off
		.71 open
12.00		
12.05		.69 "
1.00		
1.15		86
1.55		86
2.40		81
3.00		116 slightly gas from + plate
3.40		117
3.54		119 more gas - fine
4.27		117 gas slightly little more at end of charge
4.35		118
5.10		119 gas when opened
5.40		120 gas - poor
6.16		122 gas a little stronger
6.30		125 gas - stronger
8.45		126 + further.
		128 Heavy gas from both plates.

not coloured

off at 9.00

Zend run. July 25th 1901.

#1 Time	Volts	Volts	#2 Time	Volts	Volts
9.35	132	140	9.34	133	141
9.48	78(?)	88(?)	9.44	10 84	91
10.07	77(?)	88(?)	10.10	30 81	89
10.15	75(?)	87(?)	10.15	41 79	87
10.20 45	80	88	10.20	46 75	86
10.33 53	79	87	10.32	58 73	84
10.54 1.19	78	86	10.54	80 69	61
11.03 1.27	77	85	11.02	88 65.0	60
11.15 1.39	76	85	11.22	1.08 49	59
11.24 1.48	75	83	11.31	1.17 49	59
11.34 1.58	74	83	12.13	1.59 46	—
12.41 2.25	50	61	12.41	2.37 43	
12.42 2.26	0	—	12.53	2.49 43	—
12.54 2.38	19	—	1.15	3.21 39	
1.16 2.40	48		1.30	3.36 37	
1.31 2.55	47	—	1.45	3.51 33	—
1.45 3.09	45	—	2.01	4.07 25	—
2.02 3.26	43	—	2.03	4.09 23	
2.15 3.39	40	—	2.10	4.16 22	—
2.30 3.54	38	—	2.15	4.21 21	—
2.45 4.09	30	—	2.30	4.36 20	—
3 — 4.24	29	—	2.38	4.44 19	
			2.45	4.51 18	
3.19 4.43	29		3 —	5.06 16	
3.34 4.58	27				
3.52 5.16	12		3.19	5.25 15	
4.15 5.40	20 (?)		3.34	5.40 7	
4.36 6.01	22		3.36	5.42 0	
4.45 6.10	22		9.00 PM		
5.25 7.50	0	off 9.00			off

[17]

3rd Run July 26 1901

	No 2 Chan.		Opening	
1	1 —	134	145	
11	1.11	81	90	
21	1.21	79	88	
46	1.46	76	85	
1.00	2.00	53	—	
1.14	2.14	51	—	
1.51	2.51	50	—	
1.58	3.05	49	—	
1.41	3.21	48	—	
1.59	3.39	47		
1.53	4.03	45	—	
2.03	4.23	43	—	
2.22	4.42	40		
2.45	5.05	33	—	
2.05	5.25	24		
2.95	5.55	19		
3.05	6.05	17		
3.25	6.25	13		
3.34	6.34	02		
3.36	6.36	00	3.36	off
	8.25 AM			
	5.25 AM			
	67			

Silver pole & Nickel wire

Silver pole to be oxidized in Cp ~~Potas~~ Potash for a longer while so as to have amount dissolved and plated on nickel wire

Run at 3.00 pm 29/7

Ws 10.20 a.m. Aug 2nd

The liquid is very clear but a slight plating has been observed on the nickel wire, the glass tube at the bottom of the contains a very small amount of black oxide that has to be tested

Test shows Ag.

[13]

Cells received each and put on [illegible] at 10.0 on Aug 2. [illegible] many have received a long and [illegible] [illegible] hourly till 10.0

4th Aug. 27th 1901.

No 2.

Time	Amp.	Volts	Volts	MAH.
10.06	150	128	142	
10.15	"	82	90	
10.22	"	80	88	
10.36	"	78	86	
11.05	"	75	83	
11.41	"	70	81	
12.11	"	66	78	
12.38	"	61		
1.01	"	52		
1.30	"	47		
1.41	"	49		
1.56	"	47		
1.57	"	46		
2.09	"	45		
2.29	"	41		
2.45	"	34		
1.55	"	30		
Stop 5	"	MAH		

[5]

Combination of Ag2O and
Manganese Cell.

Two small Edison Cells
containing nickel wrapped
Ag2O alone.

X I 5 (3g) blackening against Marine
X II 6 (2.7g) - - reduced - - -

So as to determine whether
~~both~~ Ag2O - oxidizes based
reduction by current

Will have made several
Ag2 and Cu2 and reversi-
capacity tests in same
way as is being done on
Edison cell. i.e. one by
against several Cu2 and
reversed.

Aylsw. best Potash used

#5 oxidizing at 11-37 am.
#6 reducing at 11-37 Sept 10

#5 - 150/1000 Amp. #6 150/1000 Amp.
gases alike 30 sec.
odd at 12.00 —
odd - 1.00 pm
gases at 4.45
620 AH

Both left on hill
8 30 am. Sept 11,
Sol. Potash changed and grid roasted in distilled Water. Quite some fine stuff escaped from grids and was kept suspended while cell was going.

Both removed after cleaning at 9.00

#5	#6
Reducing at 150 ma	Oxidizing at 150 ma
Both	clean at 10.00

[ITEM FOUND IN BOOK]

Rafn Special
No 2. Run Aug 3.1901 @13.

Time	Amp	Volt	Volt	Mat
	10.0		15.0	
3.40		140		
3.42	"	109	116	
3.46	"	83	92	
3.52	"	80	89	
4.09	"	79	88	
4.32	"	77	86	
4.47	"	75	84	
5.01	"	72	81	
5.13	"	76	79	
5.30	"	67	—	
5.42	"	65		
6 —	"	58	—	
6.15	"	57	—	
6.30	"	53	—	
6.45	"	49	—	
7 —	"	49	—	
7.15	"	x48	—	
7.30	"	46	—	
7.45	"	42	—	
8 —	"	36	—	
8.10	"	30	—	
8.18	"	27	—	
8.35	"	26	—	
8.50	"	24	—	
9.08	"	23	—	
9.16	"	22	—	
9.24	"	21	—	
9.44	"	19	—	
10.10	"	15	—	
10.25	"	14	—	
1.07				

28%

25 — 70

15.0

740 75 — 70